

## PATENT ABSTRACTS OF JAPAN

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(71)Applicant : SEIKO EPSON CORP

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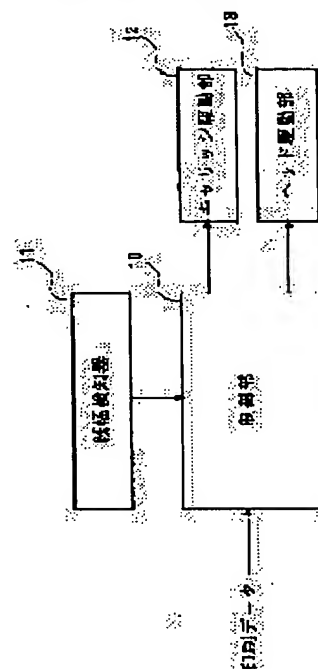
(72)Inventor : MASUDA HIDETOSHI

## (54) RECORDER AND ITS RECORDING OPERATION CONTROLLING METHOD

## (57)Abstract:

**PROBLEM TO BE SOLVED:** To execute high quality printing with a set side margin while preventing occurrence of a level difference even if the sheet width is narrower than that corresponding to data being printed.

**SOLUTION:** In the recorder, a control section begins recording operation corresponding to recording data from the reference position side when the medium width based on medium width detection information is narrower than the medium width corresponding to the recording data. The control section controls a carriage drive section and a head drive section not to execute recording exceeding the width of the recording medium, controls the carriage drive section such that a nozzle array in a recording head moving to recede from the reference position located on the side closest to the reference position reaches the position of side margin determined in correspondence with the narrowed medium width, and controls the head drive section such that the recording data corresponding to an area exceeding the side margin is masked for other nozzle arrays.



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## CLAIMS

## [Claim(s)]

[Claim 1] With the medium conveyance actuator which makes a record-medium conveyance means drive, and the carriage actuator which moves the carriage which carried the recording head to a main scanning direction With the head actuator which makes said recording head which has two or more nozzle trains drive A medium width-of-face detection means to detect the width of face of the record medium currently conveyed by said record-medium conveyance means. The control section which controls each actuation of said medium conveyance actuator, said carriage actuator, and a head actuator based on the medium width-of-face detection information sent from record data and said medium width-of-face detection means, and performs predetermined record. Although it is preparation \*\*\*\*\*, and the record actuation corresponding to said record data is started from a criteria location side when said control section has the medium width of face narrower than the medium width of face corresponding to said record data based on said medium width-of-face detection information While controlling actuation of said carriage actuator and a head actuator not to perform record more than the width of face of a record medium Said carriage actuator is controlled to reach to the location of a side margin where the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side was decided corresponding to the medium width of face which became narrow. The record data corresponding to the field to which other nozzle trains exceeded said side margin are a recording device characterized by being constituted so that a mask is carried out and said head actuator may be controlled.

[Claim 2] With the medium conveyance actuator which makes a record-medium conveyance means drive, and the carriage actuator which moves the carriage which carried the recording head to a main scanning direction With the head actuator which makes said recording head which has two or more nozzle trains drive A medium width-of-face detection means to detect the width of face of the record medium currently conveyed by said record-medium conveyance means. The control section which controls each actuation of said medium conveyance actuator, said carriage actuator, and a head actuator based on the medium width-of-face detection information sent from record data and said medium width-of-face detection means, and performs predetermined record. Although it is the record motion-control approach in preparation \*\*\*\*\*, and the record actuation corresponding to said record data is started from a criteria location side when the medium width of face based on said medium width-of-face detection information is narrower than the medium width of face corresponding to said record data Actuation of said carriage actuator and a head actuator is controlled not to perform record more than the width of face of a record medium. Said carriage actuator is controlled to reach to the location of a side margin where the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side was decided corresponding to the medium width of face which became narrow. The record data corresponding to the field to which other nozzle trains exceeded said side margin are the record motion-control approach in the recording device characterized by controlling said head actuator so that a mask is carried out.

[Translation done.]

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## DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] With the medium conveyance actuator which this invention makes drive a record-medium conveyance means, and the carriage actuator which moves the carriage which carried the recording head to a main scanning direction With the head actuator which makes said recording head which has two or more nozzle trains drive A medium width-of-face detection means to detect the width of face of the record medium currently conveyed by said record-medium conveyance means, the recording device equipped with the control section which controls each actuation of said medium conveyance actuator, said carriage actuator, and a head actuator based on the medium width-of-face detection information sent from record data and said medium width-of-face detection means, and performs predetermined record -- and -- the -- record motion-control approach Seki is carried out.

[0002]

[Description of the Prior Art] The recording device constituted so that the print data of the part which is over the form width of face which became narrow without carrying out stopping printing as an error conventionally, when the paper width detected in the paper width detector is narrower than the paper width corresponding to the data which it is going to print might not be used, but only the print data of the range settled in the form width of face might be used and printing might be performed is offered.

[0003]

[Problem(s) to be Solved by the Invention] The criteria location side of the form cross direction could begin printing using the print data of the part like the case where it is not narrow, even if form width of face became narrow, but in order to avoid the situation where ink is breathed out from a recording head exceeding form width of face, and a platen becomes dirty, as much as possible, migration of a recording head was stopped within the limits of form width of face at the other end side to which form width of face became narrow.

[0004] Therefore, when it was going to secure the predetermined side margin, needed to make the nozzle train of the location which becomes the furthest from said criteria location side reach to the location corresponding to the side margin, and record needed to perform, but when having done so, since other nozzle trains are unmovable to the location corresponding to said side margin, a level difference was clearly made to color as for them at the side side concerned, and they had the problem which is inferior in printing quality.

[0005] The object of this invention is to offer the recording device which there is no generating of said level difference, and can perform quality printing in the set-up side margin, and its record motion-control approach, even when narrower than the paper width corresponding to the data which form width of face tends to print.

[0006]

[Means for Solving the Problem] In order to attain the above-mentioned object, the recording device concerning invention given in this application claim 1 With the medium conveyance actuator which makes a record-medium conveyance means drive, and the carriage actuator which moves the carriage which carried the recording head to a main scanning direction With the

head actuator which makes said recording head which has two or more nozzle trains drive A medium width-of-face detection means to detect the width of face of the record medium currently conveyed by said record-medium conveyance means, The control section which controls each actuation of said medium conveyance actuator, said carriage actuator, and a head actuator based on the medium width-of-face detection information sent from record data and said medium width-of-face detection means, and performs predetermined record. Although it is preparation \*\*\*\*\* and the record actuation corresponding to said record data is started from a criteria location side when said control section has the medium width of face narrower than the medium width of face corresponding to said record data based on said medium width-of-face detection information While controlling actuation of said carriage actuator and a head actuator not to perform record more than the width of face of a record medium Said carriage actuator is controlled to reach to the location of a side margin where the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side was decided corresponding to the medium width of face which became narrow. It is characterized by constituting the record data corresponding to the field which other nozzle-trains exceeded said side margin so that a mask is carried out and said head actuator may be controlled.

[0007] According to this invention, the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side Although said carriage actuator will be controlled to reach to the location of the side margin decided corresponding to the medium width of face which became narrow and other nozzle trains will exceed said side margin Since the record data corresponding to the crossed field control said head actuator not to be used for record actuation so that a mask is carried out Even when narrower than the paper width corresponding to the data which form width of face tends to print, there is no generating of said level difference like before, and quality record can be performed in the set-up side margin.

[0008] Moreover, the record motion-control approach in the recording device indicated by this application claim 2 With the medium conveyance actuator which makes a record-medium conveyance means drive, and the carriage actuator which moves the carriage which carried the recording head to a main scanning direction With the head actuator which makes said recording head which has two or more nozzle trains drive A medium width-of-face detection means to detect the width of face of the record medium currently conveyed by said record-medium conveyance means, The control section which controls each actuation of said medium conveyance actuator, said carriage actuator, and a head actuator based on the medium width-of-face detection information sent from record data and said medium width-of-face detection means, and performs predetermined record. Although it is the record motion-control approach in preparation \*\*\*\*\* and the record actuation corresponding to said record data is started from a criteria location side when the medium width of face based on said medium width-of-face detection information is narrower than the medium width of face corresponding to said record data Actuation of said carriage actuator and a head actuator is controlled not to perform record more than the width of face of a record medium. Said carriage actuator is controlled to reach to the location of a side margin where the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side was decided corresponding to the medium width of face which became narrow. It is characterized by the record data corresponding to the field to which other nozzle trains exceeded said side margin controlling said head actuator so that a mask is carried out. Thereby, the same operation effectiveness as invention indicated by claim 1 is acquired.

[0009]

[Embodiment of the Invention] Hereafter, one gestalt of implementation of this invention is explained, referring to a drawing. Drawing 1 is the functional block diagram of the recording apparatus concerning this invention, drawing 2 is a mimetic diagram for explaining the operation effectiveness of this invention, and drawing 3 is a flow chart which shows the flow of the control performed by the control section of this invention.

[0010] With the form conveyance actuator which the recording device concerning this invention

itself is not [ actuator ] different from a well-known thing, and makes a form conveyance means (record-medium conveyance means) drive With the carriage actuator 12 ( drawing 1 ) which moves the carriage (omitted in drawing 2 ) which carried the recording head 1 ( drawing 2 ) to a main scanning direction With the head actuator 13 which makes said recording head 1 which has two or more nozzle trains (YMCK of drawing 2 ) drive The paper width detector 11 (medium width-of-face detection means) which detects the width of face of the form P (record medium) currently conveyed by said record-medium conveyance means, It has the control section 10 which controls each actuation of said form conveyance actuator, said carriage actuator 12, and the head actuator 13 based on the paper (medium) width-of-face detection information sent from print data (record data) and said paper width detector 11, and performs predetermined record.

[0011] And although said control section 10 starts the record actuation corresponding to said record data from a criteria location side when the paper width based on said paper width detection information is narrower than the paper width corresponding to said print data (Yes of step S1 of drawing 3 ) While controlling actuation of said carriage actuator 12 and the head actuator 13 not to perform record more than the width of face of a record medium The nozzle train (the nozzle train Y of drawing 2 (B)) of the recording head 1 which moves in the direction which separates from said criteria location most located in a criteria location side Said carriage actuator 12 is controlled to reach to the location of the side margin decided corresponding to the medium width of face which became narrow. Other nozzle trains MCK The record data corresponding to the field beyond said side margin control said head actuator 13 so that a mask is carried out (step S2 of drawing 3 ), and printing is performed (step S2 of drawing 3 ).

[0012] (A) of drawing 2 shows the condition of performing printing to the form corresponding to the data which it is going to print. The location of the recording head which showed the condition of performing printing to the form narrower than the form width of face corresponding to the data which it is going to print, and was shown by sign 1A requires (B) of drawing 2 for the conventional control, and signs 2, 3, and 4 show the part which the conventional level difference has generated. The recording head shown by sign 1B of the upper right shows the condition concerning this invention that motion control was carried out. Nozzle Y has reached to the location of a side margin, the mask of the print data is carried out and other nozzles MCK soil a platen.

[0013]

[Effect of the Invention] As explained above, according to this invention, the nozzle train of the recording head which moves in the direction which separates from said criteria location most located in a criteria location side Although said carriage actuator will be controlled to reach to the location of the side margin decided corresponding to the medium width of face which became narrow and other nozzle trains will exceed said side margin Since the record data corresponding to the crossed field control said head actuator not to be used for record actuation so that a mask is carried out Even when narrower than the paper width corresponding to the data which form width of face tends to print, there is no generating of said level difference like before, and quality record can be performed in the set-up side margin.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the functional block diagram of the recording apparatus concerning this invention.

[Drawing 2] It is a mimetic diagram for explaining the operation effectiveness of this invention.

[Drawing 3] It is the flow chart which shows the flow of the control performed by the control section of this invention.

[Description of Notations]

- 1 Recording Head
- 10 Control Section
- 11 Paper Width Detector
- 12 Carriage Actuator
- 13 Head Actuator

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(71) 出願人 000002369

セイコーエプソン株式会社

東京都新宿区西新宿 2 丁目 4 番 1 号

(72) 発明者 増田 英俊

長野県諏訪市大和 3 丁目 3 番 5 号 セイコ

ーエプソン株式会社内

(74) 代理人 100095452

弁理士 石井 博樹

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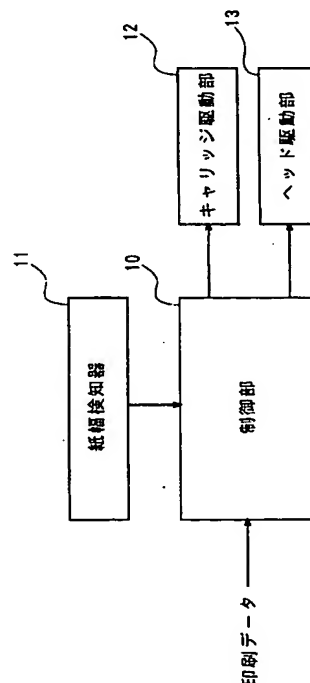
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(54) 【発明の名称】 記録装置及び記録装置における記録動作制御方法

(57) 【要約】

【課題】 用紙幅が印刷しようとするデータに対応した紙幅よりせまい場合でも、前記段差の発生がなく、且つ設定されたサイド余白で高品質な印刷を実行する。

【解決手段】 記録装置であって、前記制御部は、前記媒体幅検知情報に基づく媒体幅が、前記記録データに対応した媒体幅より狭い場合、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部及びヘッド駆動部の駆動を制御すると共に、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列がその狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えた領域に対応する記録データはマスクされるよう前記ヘッド駆動部を制御するように構成されていること



## 【特許請求の範囲】

【請求項1】 記録媒体搬送手段を駆動させる媒体搬送駆動部と、記録ヘッドを搭載したキャリッジを主走査方向に移動させるキャリッジ駆動部と、複数のノズル列を有する前記記録ヘッドを駆動させるヘッド駆動部と、前記記録媒体搬送手段によって搬送されている記録媒体の幅を検知する媒体幅検知手段と、記録データ及び前記媒体幅検知手段から送られる媒体幅検知情報に基づいて前記媒体搬送駆動部、前記キャリッジ駆動部及びヘッド駆動部の各駆動を制御して所定の記録を実行する制御部と、を備えた記録装置であって、

前記制御部は、前記媒体幅検知情報に基づく媒体幅が、前記記録データに対応した媒体幅より狭い場合、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部及びヘッド駆動部の駆動を制御すると共に、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列がその狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えた領域に対応する記録データはマスクされるよう前記ヘッド駆動部を制御するように構成されていることを特徴とする記録装置。

【請求項2】 記録媒体搬送手段を駆動させる媒体搬送駆動部と、記録ヘッドを搭載したキャリッジを主走査方向に移動させるキャリッジ駆動部と、複数のノズル列を有する前記記録ヘッドを駆動させるヘッド駆動部と、前記記録媒体搬送手段によって搬送されている記録媒体の幅を検知する媒体幅検知手段と、記録データ及び前記媒体幅検知手段から送られる媒体幅検知情報に基づいて前記媒体搬送駆動部、前記キャリッジ駆動部及びヘッド駆動部の各駆動を制御して所定の記録を実行する制御部と、を備えた記録装置における記録動作制御方法であって、

前記媒体幅検知情報に基づく媒体幅が、前記記録データに対応した媒体幅より狭い場合、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部及びヘッド駆動部の駆動を制御し、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列がその狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えた領域に対応する記録データはマスクされるよう前記ヘッド駆動部を制御することを特徴とする記録装置における記録動作制御方法。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】この発明は、記録媒体搬送手段を駆動させる媒体搬送駆動部と、記録ヘッドを搭載し

たキャリッジを主走査方向に移動させるキャリッジ駆動部と、複数のノズル列を有する前記記録ヘッドを駆動させるヘッド駆動部と、前記記録媒体搬送手段によって搬送されている記録媒体の幅を検知する媒体幅検知手段と、記録データ及び前記媒体幅検知手段から送られる媒体幅検知情報に基づいて前記媒体搬送駆動部、前記キャリッジ駆動部及びヘッド駆動部の各駆動を制御して所定の記録を実行する制御部と、を備えた記録装置及びその記録動作制御方法に関する。

## 【0002】

【従来の技術】従来、紙幅検知器によって検知された紙幅が、印刷しようとするデータに対応した紙幅より小さい場合、エラーとして印刷をやめることはしないで、狭くなった用紙幅を越えている部分の印刷データは使わず、その用紙幅に収まる範囲の印刷データだけ使って印刷を実行するように構成された記録装置が提供されている。

## 【0003】

【発明が解決しようとする課題】用紙幅方向の基準位置側は、用紙幅が狭くなっても、狭くなっていない場合と同様にその部分の印刷データを使って印刷を始めることができるが、用紙幅が狭くなった他端側では、用紙幅を超えて記録ヘッドからインクが吐出されてプラテンが汚れる事態を極力避けるため、用紙幅の範囲内で記録ヘッドの移動を止めていた。

【0004】そのため、所定のサイド余白を確保しようとする前記基準位置側から最も遠くなる位置のノズル列を、そのサイド余白に対応する位置まで到達させて記録を実行する必要があるが、そうすると他のノズル列は前記サイド余白に対応する位置まで移動できないため、当該サイド側においては、色彩にはっきり段差ができてしまい、印刷品質が劣る問題があった。

【0005】本発明の目的は、用紙幅が印刷しようとするデータに対応した紙幅より小さい場合でも、前記段差の発生がなく、且つ設定されたサイド余白で高品質な印刷を実行することができる記録装置及びその記録動作制御方法を提供することにある。

## 【0006】

【課題を解決するための手段】上記目的を達成するために、本願請求項1に記載の発明に係る記録装置は、記録媒体搬送手段を駆動させる媒体搬送駆動部と、記録ヘッドを搭載したキャリッジを主走査方向に移動させるキャリッジ駆動部と、複数のノズル列を有する前記記録ヘッドを駆動させるヘッド駆動部と、前記記録媒体搬送手段によって搬送されている記録媒体の幅を検知する媒体幅検知手段と、記録データ及び前記媒体幅検知手段から送られる媒体幅検知情報に基づいて前記媒体搬送駆動部、前記キャリッジ駆動部及びヘッド駆動部の各駆動を制御して所定の記録を実行する制御部と、を備えた記録装置であって、前記制御部は、前記媒体幅検知情報に基づく



媒体幅が、前記記録データに対応した媒体幅より狭い場合、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部及びヘッド駆動部の駆動を制御すると共に、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列がその狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えた領域に対応する記録データはマスクされるよう前記ヘッド駆動部を制御するように構成されていることを特徴とする。

【0007】本発明によれば、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列が、その狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えることになるが、その越えた領域に対応する記録データは記録動作に使われないよう、即ちマスクされるよう前記ヘッド駆動部を制御するようになっているので、用紙幅が印刷しようとするデータに対応した紙幅よりせまい場合でも、従来のような前記段差の発生がなく、且つ設定されたサイド余白で高品質な記録を実行することができる。

【0008】また、本願請求項2に記載された記録装置における記録動作制御方法は、記録媒体搬送手段を駆動させる媒体搬送駆動部と、記録ヘッドを搭載したキャリッジを主走査方向に移動させるキャリッジ駆動部と、複数のノズル列を有する前記記録ヘッドを駆動させるヘッド駆動部と、前記記録媒体搬送手段によって搬送されている記録媒体の幅を検知する媒体幅検知手段と、記録データ及び前記媒体幅検知手段から送られる媒体幅検知情報に基づいて前記媒体搬送駆動部、前記キャリッジ駆動部及びヘッド駆動部の各駆動を制御して所定の記録を実行する制御部と、を備えた記録装置における記録動作制御方法であって、前記媒体幅検知情報に基づく媒体幅が、前記記録データに対応した媒体幅より狭い場合、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部及びヘッド駆動部の駆動を制御し、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列がその狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル列は前記サイド余白を越えた領域に対応する記録データはマスクされるよう前記ヘッド駆動部を制御することを特徴とする。これにより、請求項1に記載された発明と同様の作用効果が得られる。

【0009】

【発明の実施の形態】以下、図面を参照しながら、この発明の実施の一形態を説明する。図1は本発明に係る記

録装置の機能ブロック図であり、図2は本発明の作用効果を説明するための模式図であり、図3は本発明の制御部で行われる制御のフローを示すフローチャートである。

【0010】本発明に係る記録装置自体は、公知のものと変わらず、用紙搬送手段（記録媒体搬送手段）を駆動させる用紙搬送駆動部と、記録ヘッド1（図2）を搭載したキャリッジ（図2では省略されている）を主走査方向に移動させるキャリッジ駆動部12（図1）と、複数のノズル列（図2のY M C K）を有する前記記録ヘッド1を駆動させるヘッド駆動部13と、前記記録媒体搬送手段によって搬送されている用紙P（記録媒体）の幅を検知する紙幅検知器11（媒体幅検知手段）と、印刷データ（記録データ）及び前記紙幅検知器11から送られる紙（媒体）幅検知情報に基づいて前記用紙搬送駆動部、前記キャリッジ駆動部12及びヘッド駆動部13の各駆動を制御して所定の記録を実行する制御部10と、を備えている。

【0011】そして、前記制御部10は、前記紙幅検知情報に基づく紙幅が、前記印刷データに対応した紙幅より狭い場合（図3のステップS1のYes）、基準位置側から前記記録データに対応した記録動作を始めさせるが、記録媒体の幅を超えて記録を実行しないよう前記キャリッジ駆動部12及びヘッド駆動部13の駆動を制御すると共に、前記基準位置から離れる方向に移動する記録ヘッド1の最も基準位置側に位置するノズル列（図2（B）のノズル列Y）が、その狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部12を制御し、他のノズル列M C Kは、前記サイド余白を越えた領域に対応する記録データはマスクされるよう（図3のステップS2）前記ヘッド駆動部13を制御し、そして印刷が実行される（図3のステップS2）。

【0012】図2の（A）は、印刷しようとするデータに対応した用紙に印刷を実行している状態を示す。図2の（B）は、印刷しようとするデータに対応した用紙幅より狭い用紙に印刷を実行している状態を示し、符号1Aで示した記録ヘッドの位置は、従来の制御にかかり、符号2, 3, 4は従来の段差が発生している部分を示す。その右上の符号1Bで示した記録ヘッドは、本発明に係る動作制御された状態を示している。ノズルYがサイド余白の位置まで到達しており、他のノズルM C Kは印刷データがマスクされ、プラテンを汚さないようになっている。

【0013】

【発明の効果】以上説明したように、この発明によれば、前記基準位置から離れる方向に移動する記録ヘッドの最も基準位置側に位置するノズル列が、その狭くなった媒体幅に対応して決められたサイド余白の位置まで到達するよう前記キャリッジ駆動部を制御し、他のノズル

列は前記サイド余白を越えることになるが、その越えた領域に対応する記録データは記録動作に使われないよう、即ちマスクされるよう前記ヘッド駆動部を制御するようになっているので、用紙幅が印刷しようとするデータに対応した紙幅よりせまい場合でも、従来のような前記段差の発生がなく、且つ設定されたサイド余白で高品質な記録を実行することができる。

【図面の簡単な説明】

【図1】本発明に係る記録装置の機能ブロック図である。

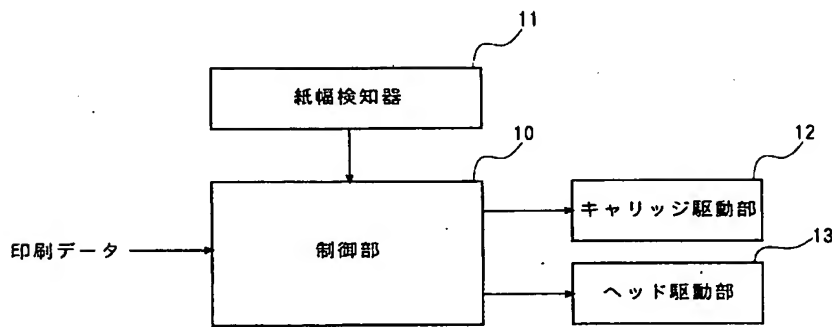
【図2】本発明の作用効果を説明するための模式図である。

【図3】本発明の制御部で行われる制御のフローを示すフローチャートである。

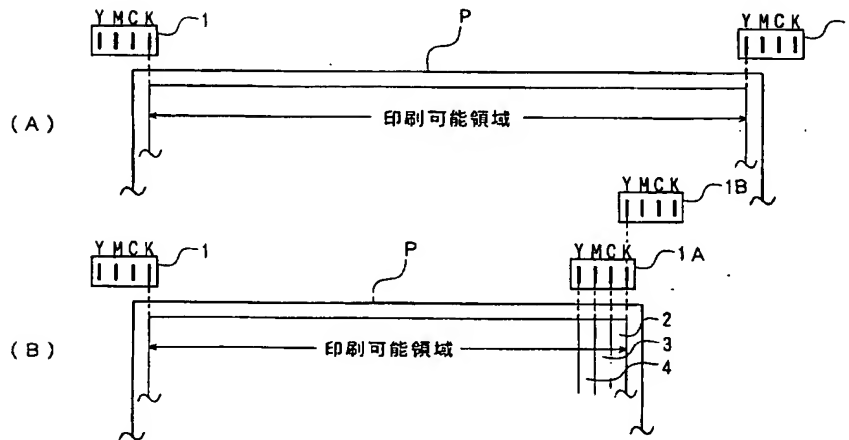
【符号の説明】

- 1 記録ヘッド
- 10 制御部
- 11 紙幅検知器
- 12 キャリッジ駆動部
- 13 ヘッド駆動部

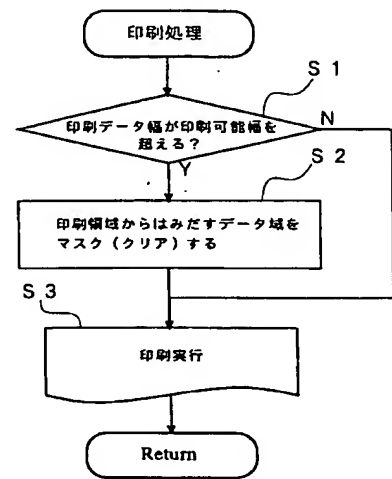
【図1】



【図2】



【図3】



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